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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/964,581	09/28/2001	Yumiko Oyasato	212462US0RD	2398

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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.  
1940 DUKE STREET  
ALEXANDRIA, VA 22314

EXAMINER
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WYROZEBSKI LEE, KATARZYNA I

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 08/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/964,581	OYASATO ET AL.	
	Examiner	Art Unit	
	Katarzyna Wyrozewski Lee	1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on Interview of 8/14/2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 18 and 19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-6 and 8-17 is/are rejected.
- 7) ☒ Claim(s) 3 and 7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
     If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                     | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) Paper No(s). <u>0803</u> . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                            | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)                   |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>0901</u> . | 6) <input type="checkbox"/> Other:  |

## DETAILED ACTION

### *Election/Restrictions*

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-17, drawn to method for decomposition of thermosetting resin, classified in class 521, subclass 48.
  - II. Claim 18, drawn to apparatus utilized to decompose thermosetting resin, classified in class 204, subclass 230.2.
  - III. Claim 19, drawn to control program for controlling the heater, classified in class 432, subclass 51.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I, II and III are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions since the claims of Group I are oriented towards chemical composition, Group II toward mechanical or apparatus and Group III toward computer controls.

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3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

5. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II or III, restriction for examination purposes as indicated is proper.

6. During a telephone conversation with Mr. Tom Blinka on 8/14/2003 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-17. Affirmation of this election must be made by applicant in replying to this Office action. Claims 18 and 19 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

7. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the

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application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1, 2, 4-6, 8-12, 17 are rejected under 35 U.S.C. 102(b) as being anticipated by CASTLE (US 3,954,681).

The example of prior art of CASTLE (col. 6) discloses following process: 1 pound of pulverized polyurethane was heated to a temperature of 220-290°F (equivalent of 104-143°C) to reach a cohesive mass, or in other words until it is melted. While stirring at the temperature indicated above, 20 cc of water have been added to the mass in the mixer. Therefore the temperature before reaction has taken place and after are substantially the same. The temperature was then maintained for 15 minutes. In example III CASTLE utilized butanediol as decomposing or devulcanizing agent. Example IV utilized ethyl alcohol, example V utilized triisopropyl amine. Since polyurethane resin has partially positive carbonyl group, that in case of alcohol as the decomposing agent an oxygen will react with carbonyl group and in case of amine a nitrogen thereby forming an intermediate that can be further utilized for whatever purpose.

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This is a well known reaction scheme, where electron "rich" compound reacts with positively charged carbon of the carbonyl group.

CASTLE also discloses that the amount of time required for the polyurethane to reach cohesive mass is very short, about two minutes (col. 3, lines 52-54) and that the decomposition temperature for polyurethane is 280-300°F (137-148°C) (col. 3, line 44). With respect to the time limitation required by claim 2 of the present invention, the examiner has performed calculation with the temperatures utilized by CASTLE. In the instant case 0.0125 was multiplied by both 104°C and 143°C giving 1.3 and 1.78 respectively. Subtracting these two numbers from both 3.375 and 8.25 gave time frame of 1.725 min and 6.95 minutes. In which case, the prior art of CASTLE reciting 2 minutes still applies.

Resulting product has softening temperature of 250-450°F (121-232°C) (col. 4, line 65), since boiling point of water is approximately 104°C, then the boiling point of the product is higher.

Ratio of the decomposer to the polymer as seen in example V is as follows. Per 100 parts of the polyurethane 20 parts of triisopropyl amine were added. The ratio is 100:20 or 5:1.

In the light of the above disclosure, prior art of CASTLE anticipates requirements of claims rejected below.

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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13. Claims 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over CASTLE (US 3,954,681) in view of MUNZMAY (US 5,616,623).

The discussion of the disclosure of the prior art of CASTLE from paragraph 9 of this office action is incorporated here by reference.

The difference between the present invention and the disclosure of the prior art of CASTLE is other agents, which can decompose polyurethane resin.

With respect to the above argument, the prior art of MUNZMAY discloses another process for decomposition of thermosetting polyurethane waste products.

According to col. 3, lines 55-60 discloses that the compounds reactive with polyurethane include ethanolamine, diethanolamine, triethanolamine and other aminoalcohols.

Amino alcohols just like triisopropyl amine contains nitrogen with lone pair electrons, which will be capable of reacting with partially positive carbonyl group and thereby cause decomposition of polyurethane.

In the light of the above disclosure, it would have been obvious to one having ordinary skill in the art at the time of the instant invention to utilize aminoalcohols of MUNZMAY in the instead of triisopropyl amine in process of CASTLE and thereby obtain the claimed invention. Utilizing aminoalcohols of MINZMAY would still result in decomposition of the thermosetting polyurethane.



*Allowable Subject Matter*

14. Claims 3 and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record does not teach step of monitoring the addition of decomposer until its content is reduced to less than 10 %. In fact, the prior art of CASTLE utilizes larger amounts of decomposing solvent (col. 6) so that the PU particles are uniformly dispersed. The prior art of MUNZMAY adds PU to large amount of already heated decomposing solvent, wherein the amount of solvent is greater than 10%.

The temperatures of the premixing or pre-kneading step of CASTLE are the same during the step of adding the decomposing solvent into the waste resin and are maintained through the reaction time and afterwards. CASTLE does not teach lowering of the temperature during the reaction time. MUNZMAY does not pre-heat its waste polymer.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katarzyna Wyrozebski Lee whose telephone number is (703) 306-5875. The examiner can normally be reached on Mon-Thurs 6:30 AM-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (703) 306-2777. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

*Kafasima Wiprecksu Lee*

KIWL

August 20, 2003